ABSTRACT OF THE DISCLOSURE

The present invention relates to a Raman amplification optical fiber and the like comprising a structure which can Raman-amplify signal light including a plurality of wavelength components at a high efficiency and effectively restrain signal waveforms from deteriorating due to influences of nonlinear optical phenomena, while improving the degree of freedom in the design of optical fiber transmission lines and Raman amplifiers. As characteristics at each wavelength of signal light, the Raman amplification optical fiber has a chromatic dispersion with an absolute value of 6 ps/nm/km or more but 20 ps/nm/km or less, and an effective area A_{eff} of 20 μm^2 or less, preferably less than 15 μm^2. More preferably, as a characteristic at each wavelength of signal light, the Raman amplification optical fiber has a Raman gain coefficient G_R/A_{eff} of 0.005 $(W \cdot m)^{-1}$ or more.